Application No. 09/872,412
Reply to Office Action of December 8, 2005

REMARKS/ARGUMENTS

In an Office Action dated December 8, 2005, claims 20-22, 31, 35, 39 and 42 were rejected under § 103 over Wyatt in view of Lin; claims 5-7, 32-34, 36-38, 40 and 43-45 were objected to and the remaining claims were rejected under § 103 over Wyatt and various other references. Applicants submit that the claims are allowable.

§ 103 Rejections over Wyatt in view of Lin

Claims 20-22, 31, 35, 39 and 42 were rejected under § 103 over Wyatt in view of Lin. Applicants respectfully traverse the rejection.

Claim 31

Claim 31 requires "transmitting the queued frames from the plurality of first ports to the plurality of second ports so that the frames are received at the second ports in order as received at the first switch." The Office Action referenced p. 2, ¶ 25 of Wyatt stating that the data flow is transmitted to the destination in the order that they are received. The full quote of Wyatt is "data packets 140a-c for the data flow from source 102a to destination 112c are transmitted to the destination 112 in the order that they are received by the switch 100."

The Office Action correctly notes that Wyatt does not disclose receiving the frames in order at the second ports. To overcome this missing disclosure, the Office Action references Lin. The Office Action first indicates that Lin discloses two switches containing a plurality of ports connected through a number of links, citing ¶ 11. However, this overstates the teachings of ¶ 11 of Lin. While Applicants acknowledge that each of the switches of Lin in ¶ 11 contain a plurality of ports, Applicants note that ¶ 11 only discloses one link between the two switches, from a first link port on the first switch to a second link port on the second switch. Thus ¶ 11 of Lin only teaches one link between the two switches, not the "number of links" stated on the Office Action. This single link between any two switches on Lin is confirmed by reviewing Figs. 4-6 of Lin, which show only a single link between any two switches. Thus Applicants submit that Lin does not teach this fundamental requirement of claim 31.

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The Office Action then goes on to reference a programmable delay element in the links, referencing ¶¶ 45, 46, 49 and 53. Even if Lin were to have a number of links between switches, and it does not as discussed above, the programmable delay element in Lin does not synchronize links to allow in order reception as required in the claim. The delay element of Lin is utilized so that the signals on the various pins of Lin, which form a link, are transmitted from the switch of Lin with no inter-signal skew, particularly with reference to the clock signal used in Lin. Quoting from ¶ 45 of Lin: "Each data signal is fed through a series of delay elements B6-B11, preferably programmable, before being output from switch SOC 10(1). Those programmable delay elements make up a variable delay circuit that may be varied, ... to align each data signal with the clock signal in order to eliminate skew." Then from ¶ 49: "For example, the Broadcom Corp. developed a library which may be used to accurately predict the delay based on varying wiring lengths within a chip. Using the library, it can be determined how to calibrate the variable delay circuit by selecting the value for each delay elements ... in order to reduce skew between individual data circuits and to synchronize the data signals with each other and the output clock Tout." As to ¶ 53 of Lin, it discusses synchronizing the signals. Applicants then note the first sentence of ¶ 54, which states: "Next, at step S9-6, the data and the clock are output of the device."

Thus Lin can teach nothing more than transmitting signals in synchronization and without skew. As stated previously, in order (or here in synchronization) transmission does not teach or suggest in order receipt, as required in claim 31. Thus, while Lin may mention eliminating skew, it does so only for transmission, not for receiving, and adds nothing to Wyatt.

Applicants thus submit that Wyatt and Lin do not teach or suggest a required claim element of claim 31 and those dependent therefrom.

Claims 35, 39 and 42

Each of these claims similarly requires "transmitting logic for transmitting the queued frames from said two ports over said two links so that the frames are received at said two ports of said second network device in order." As discussed with respect to

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claim 31, Wyatt and Lin only disclose transmission in order, not reception in order, thus not teaching or suggesting a required claim element.

Applicants submit that claims 35-45 are allowable over Wyatt and Lin.

Claim 20

Claim 20 requires "the transmit port routing frames received at the first switch across the group to the second switch." The Office Action acknowledged that Wyatt does not disclose this element. To apparently address this missing element the Office Action references Lin, stating it discloses I/O transmitters and receivers at each port, and logic within the port for forwarding data to a destination, referencing ¶ 40 in Lin. Applicants respectfully traverse this rejection. Applicants acknowledge that ¶ 40 does specifically state that SOC 10(1) includes I/O transmitters and receivers at its ports and that the ports of Lin do pass data to a destination. However, Applicants respectfully submit that Lin does not teach or suggest "the transmit port routing frames received at the first switch across the group to the second switch."

As a first point, Lin does not teach or suggest parallel links between switches, as discussed above, so that no "group" is ever disclosed, taught or suggested. Thus a fundamental requirement of the claim element is not present in Lin. As such there can be no teaching or suggestion of "the transmit port routing frames ... across the group." Further, the Office Action uses the word "forwarding," which is not believed to be present in ¶ 40 of Lin. But even so, "forwarding" is not "routing." Routing indicates selection of one of several possible paths, while forwarding simply indicates providing or moving along. Therefore, even on its face, the Office Action is not proper, as an element of claim 20 is missing.

Applicants thus submit that Wyatt and Lin do not show a required claim element of claim 20 and those dependent therefrom.

Remaining 103 Rejections

The remaining claims were rejected over Wyatt and various references including Muller, O'Keefe, Bertin and Kadambi. Applicants respectfully traverse the rejections.

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Claim 1

Applicants respectfully submit that the trunking master ports required in claim 1 are not shown, taught or suggested by the combination of Muller, Wyatt and O'Keefe.

Claim 1 requires that the trunking master control the frames routed over the trunked group. The Office Action references col. 1, lines 37-50 of O'Keefe as suggesting this claim element. Applicants respectfully disagree.

The relevant portions of the citation read:

> "Packets which are destined for a remote device that is linked via a trunk are directed to the bridge port of that trunk and simple low level circuitry decides, . . ., which physical port of the trunk should be used for forwarding the packet to the remote device."

This is explained in more detail in Fig. 2 of O'Keefe and col. 4, lines 23-46. Referring to Fig. 2 of O'Keefe, the switch logic 8 selects the destination port, the BP port. The hashing logic 9 then selects a particular port 6 or 7 for the packet. Applicants specifically note that the switching logic and hashing logic 9 are not a portion of the ports 6 or 7 and thus does not meet the requirements of claim 1 where the trunking master ports control the frame routing over the trunked group.

The Office Action addresses this argument by stating that "port routing is equivalent to any routing function that occurs within a port, including the mere transmission and reception of data." But Applicants submit that this sentence itself misdefines the word "routing." As discussed above, routing indicates selection of one of several possible paths. Mere transmission and reception of data is not routing, as there is no indication or suggestion of several possible paths among which to choose.

When this proper definition of routing is applied to O'Keefe, it becomes clear that there is no routing occurring in the ports 6 or 7 of O'Keefe.

Therefore, while O'Keefe may use similar language, a closer inspection reveals that O'Keefe actually teaches away from the claim requirements. Thus Applicants respectfully submit that claim 1 and those dependent therefrom are allowable over the combination of Muller, Wyatt and O'Keefe.

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Claim 11

Applicants first note that for claim 11 an input port has been defined to be a master transmit port. This contradicts the elements of Muller defined by the Office Action as trunking master ports in claim 1 (output ports as best understood) and claim 10 (clearly output ports). It is a fundamental point that the definition of an item cannot change between claims. Thus this forms a first reason the rejection of claim 11 is improper.

Secondly, claim 11 requires enabling a frame to be received at the second switch with "in-order" delivery. The remarks made for claim 31 apply equally here for claim 11. Thus Applicants submit that Muller and Wyatt do not show "in-order" delivery.

Applicants note that this argument, and those of claims 23 and 24, have been repeated verbatim from the previous response as they were not addressed in the Office Action.

Claim 23

Applicants traverse the rejection of claim 23. In addition to the requirements of claim 20 discussed above, claim 23 requires a timer used in conjunction with a list associated with the transmit port to ensure "in-order" delivery of frames. Applicants request reference to paragraph 51 of the present application. In the preferred embodiment the timers bind or block transmit operations until the relevant link skew is accommodated. A mere timer to measure propagation delay does nothing like this. A propagation delay timer would do nothing to ensure "in-order" delivery. Thus the mere presence of a timer to measure propagation delay does not begin to teach or suggest various requirements of claim 23.

Claim 24

Applicants traverse this rejection. The Office Action defines the timer in claim 23 to be for maintaining propagation delay and then in claim 24 the Office Action references a time to live parameter. These two items in Bertin are completely unrelated, yet the Office Action attempts to use them in some combination. As claim 24 is dependent on claim 23 and further defines the timer of claim 23, this reference to a completely different item is improper and the rejection must be withdrawn.

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CONCLUSION

Based on the above remarks Applicants respectfully submit that all of the present claims are allowable. Reconsideration is respectfully requested.

Respectfully submitted,

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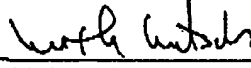   Rutherford & Brucculeri, L.L.P.
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